can be most cheaply produced with a phosphorus content of approximately 1 per cent. Such brands of pig iron involved until recently such difficulties in working that it was generally regarded as imperative to alter the phosphorus content often at considerable cost. It was frequently increased so far that the pig iron became usable for the Thomas-Gilchrist (basic Bessemer) process.

Where this increase was omitted, since phosphorus is regarded as an unmitigated evil, one was glad to have found in the puddling furnace and basic open-hearth furnace, apparatuses which admitted of its being rendered harmless, even if it be itself completely lost, and its removal caused considerable expense into the bargain.

The basic furnace creates herein a change of conditions ; it permits the phosphorus to be changed into a valuable product without loss of material, and thereby opens up new sources of revenue to works of the class quoted.

The high carbon metal which is obtained in the winning of the phospbatic slag must, after returning to the furnace, receive additions of iron peroxide for the removal of the carbon. This iron peroxide must be dissolved, and for this silica is requisite, which now no longer can be produced from the metal because the silicon already has been removed by the first operation. The decarburisation can further only take an intense course if sufficient quantities of dissolved iron peroxide are at disposal, and on this ground an addition o£ silica is necessary. One could well now employ ores with a higher silica content than was permissible for the dephosphor-isation. Nevertheless, another circumstance tells on the other hand—namely, there now is a deficit also of the manganese of the pig iron which likewise was removed in the first furnace. One must, therefore, have a care for a manganese content in the slag, in order to hinder red shortness making its appearance. One could thus derive silica as well as a large portion of the necessary manganese from final slags, which originate from former "heats" of completely decar-burised metal, which 0. Goldstein ("Stahl und Eisen," 1905, p. 1,230) and others have adopted in similar instances. Such